

Appl. No. 09/928717
Amdt. dated February 28, 2007
Reply to Office Action of Nov. 30, 2006

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 – 31 (cancelled)

Claim 32 (currently amended): A geodesic structure comprising a plurality of conical elements, each conical element of said plurality of conical elements having a cone base, a cone wall and a vertex, said cone wall defined by straight lines that extend from said base and intersect each other at said vertex, wherein said plurality of conical elements are arranged to form a shell that surrounds an inner volume, and wherein said vertex of at least one of said conical elements points outward away from said inner volume, such that at least one straight line of said cone wall of a first conical element extends substantially parallel to at least one straight line in said cone wall of an adjacent conical element so as to form together a straight strut between said vertex of said first conical element and said vertex of said adjacent conical element, and wherein said conical element has a cone-wall length that extends between said vertex and said cone base and said plurality of conical elements are arranged such that a distance and a direction of displacement between any two vertexes of adjacently placed conical elements provides an adjustability of said straight strut that is infinitely variable between a minimum limit and a maximum limit, said maximum limit of said straight strut being slightly less than a sum of cone-wall lengths of any two adjacent conical elements and said minimum limit of said straight strut is slightly greater than said cone wall length of one of said two adjacent conical elements.

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Claim 33 (previously presented): The structure of claim 32, wherein said conical element is a circular cone and said cone base is a circular base, and wherein said conical elements are placed in an overlapping arrangement wherein a portion of said circular base of said first conical element overlaps with a portion of said cone wall of said adjacent conical element, so as to form said shell.

Claim 34 (cancelled)

Claim 35 (previously presented): The structure of claim 33, wherein said portion of said circular base of said first circular cone overlaps a portion of said cone wall of at least three adjacent conical elements, so as to form said shell having a closed surface;

wherein said overlapping arrangement further includes an overlap of a portion of said circular base of said first conical element with a portion of said cone wall of at least a second conical element, a third conical element, and a fourth conical element;

wherein a first amount of overlap between said first conical element and said second conical element forms a first strut distance and direction between said vertexes of said first conical element and said second conical element, a second amount of overlap between said first conical element and said third conical element forms a second strut distance and direction between said vertexes of said first conical element and said third conical element, and a third amount of overlap between said first conical element and said fourth conical element forms a third strut distance and direction between said vertexes of said first conical element and said fourth conical element; and

wherein said first strut distance and direction is any distance and direction between said minimum and said maximum limits, said second strut distance and direction is any distance and direction between said minimum and said maximum limits,

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and said third strut distance is any distance and direction between said minimum and said maximum limits.

Claim 36 (previously presented): The structure of claim 35, wherein an opening is formed in said shell to provide access to an inner space of said shell.

Claims 37 – 41 (cancelled)

Claim 42 (previously presented): The structure of claim 32, wherein said conical element has an angular deficit α that defines an amount of taper of said cone wall between said cone base and said vertex, and wherein said angular deficit α of said conical element varies in magnitude from said angular deficit α of an adjacent conical element.

Claim 43 (original): The structure of claim 42, wherein said plurality of conical elements includes two groups of conical elements, each group having a different magnitude of said angular deficit α , and wherein said conical elements of said two groups are arranged in an alternating pattern.

Claim 44 (original): The structure of claim 32, further comprising a skin that is placed over said shell.

Claim 45 (previously presented): The structure of claim 32, wherein said conical elements are arranged with said vertex of some of said conical elements facing inward and with said vertex of other ones of said conical elements facing outward, so as to form said shell having an irregular shape.

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Claim 46 (original): The structure of claim 32, wherein said conical element is constructed of sheet material from a group of material consisting of paper fiber products, wood fiber products, composite material, sheet metal, corrugated metal, polymeric material, rubber, woven materials, pressed materials, coated materials, and combinations thereof.

Claim 47 (original): The structure of claim 32 further comprising a fastening means for attaching said plurality of conical elements to one another, wherein said fastening means includes means from the group consisting of adhesive means, threaded fasteners, staples, crimped edges, folded edges, rivets, hook-and-loop fasteners, nails, and combinations thereof.

Claims 48 – 50 (cancelled)

Claim 51 (new): A geodesic structure comprising a plurality of conical elements, each conical element of said plurality of conical elements containing a right circular cone having a vertex and a cone wall, said cone wall formed by straight lines that are defined by a straight line that sweeps in a circle about a vertical axis that extends through said vertex, thereby forming said straight lines that extend from a base edge of said cone and intersect each other at said vertex, wherein said plurality of conical elements are arranged to form a shell that surrounds an inner area, and wherein said vertex of at least one of said conical elements points outward away from said inner area, such that at least one straight line of said cone wall of a first conical element extends substantially parallel to at least one straight line in said cone wall of an adjacent conical element so

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as to form a straight strut between said vertex of said first conical element and said vertex of said adjacent conical element, and wherein said plurality of conical elements are arranged such that a distance and a direction of displacement between any two vertexes of adjacently placed conical elements is infinitely variable between a minimum limit and a maximum limit.

Claim 52 (new): The structure of claim 51, wherein said conical elements are placed in an overlapping arrangement, such that a portion of said cone wall of said first conical element overlaps with a portion of said cone wall of said adjacent conical element, so as to form said shell.

Claim 53 (new): The structure of claim 52, wherein said portion of said cone wall of said first circular cone overlaps a portion of said cone wall of at least three adjacent conical elements, so as to form said shell having a closed surface;

wherein said overlapping arrangement further includes an overlap of a portion of said cone wall of said first conical element with a portion of said cone wall of at least a second conical element, a third conical element, and a fourth conical element;

wherein a first amount of overlap between said first conical element and said second conical element forms a first strut distance and direction between said vertexes of said first conical element and said second conical element, a second amount of overlap between said first conical element and said third conical element forms a second strut distance and direction between said vertexes of said first conical element and said third conical element, and a third amount of overlap between said first conical element and said fourth conical element forms a third strut distance and direction between said vertexes of said first conical element and said fourth conical element; and

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wherein said first strut distance and direction is any distance and direction between said minimum and said maximum limits, said second strut distance and direction is any distance and direction between said minimum and said maximum limits, and said third strut distance is any distance and direction between said minimum and said maximum limits.

Claim 54 (new): The structure of claim 53, wherein an opening is formed in said shell to provide access to an inner space of said shell.

Claim 55 (new): The structure of claim 51, wherein said conical element has an element length defined by a length of said cone wall from said base edge to said vertex and wherein said maximum limit is slightly less than a sum of said element lengths of any two adjacent conical elements and said minimum limit is slightly greater than one-half of a sum of said element lengths of any two adjacent conical elements.

Claim 56 (new): The structure of claim 51, wherein said conical element has an angular deficit α that defines an amount of taper of said cone wall between said base edge and said vertex, and wherein said angular deficit α of said conical element varies in magnitude from said angular deficit α of an adjacent conical element.

Claim 57 (new): The structure of claim 51, further comprising a skin that is placed over said shell.

Claim 58 (new): The structure of claim 51, wherein said conical element is constructed of sheet material from a group of material consisting of paper fiber products, wood fiber

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products, composite material, sheet metal, corrugated metal, polymeric material, rubber, woven materials, pressed materials, coated materials, and combinations thereof.

Claim 59 (new): The structure of claim 51, further comprising a fastening means for attaching said plurality of conical elements to one another, wherein said fastening means includes means from the group consisting of adhesive means, threaded fasteners, staples, crimped edges, folded edges, rivets, hook-and-loop fasteners, nails, and combinations thereof.

Claim 60 (new): A geodesic structure comprising a plurality of conical elements, each conical element of said plurality of conical elements being a single element having a cone base, a cone wall and a vertex, said cone wall defined by straight lines that extend from said base and intersect each other at said vertex, wherein said plurality of conical elements are arranged to form a shell that surrounds an inner volume, and wherein said vertex of at least one of said conical elements points outward away from said inner volume, such that at least one straight line of said cone wall of a first conical element extends substantially parallel to at least one straight line in said cone wall of an adjacent conical element so as to form together a straight strut between said vertex of said first conical element and said vertex of said adjacent conical element, and wherein said conical element has a cone-wall length that extends between said vertex and said cone base and said plurality of conical elements are arranged such that a distance and a direction of displacement between any two vertexes of adjacently placed conical elements provides an adjustability of said straight strut that is infinitely variable between a minimum limit and a maximum limit, said maximum limit of said straight strut being slightly less than a sum of cone-wall lengths of any two adjacent conical elements and

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said minimum limit of said straight strut is slightly greater than one-half of a sum of said cone-wall lengths of any two adjacent conical elements.